What is Global Warming?

You might think that a stable climate is as inevitable as death and taxes. After all, weather changes from day to day, but we expect that a region's climate—its average weather conditions over the long-term—will remain the same, with minor variations, from year to year. We say that Seattle has a rainy climate and San Diego a sunny climate, and we expect that to be true for decades at least.

But a consistent climate is not an immutable law of nature. During the Earth's long history, climate has changed many times, albeit slowly. Now, 2,000 of the world's leading independent scientists think that the climate may be changing again.

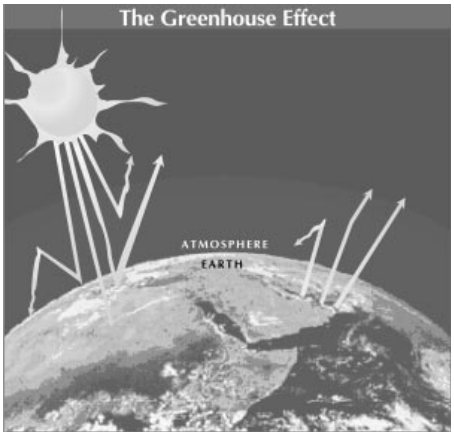
When the Earth's average temperature starts to go up—global warming—then the climate has begun to change. Scientists' measurements indicate that the average global temperature has increased by about 1 degree Fahrenheit over the past century.

According to the Intergovernmental Panel on Climate Change, a panel of scientists convened by the United Nations' Environment Program and World Meteorological Organization, the Earth will warm 2 to 6 degrees Fahrenheit by the year 2100, with a best estimate of about 4 degrees Fahrenheit.

Why is global warming happening? Scientists are not exactly sure. Part of the warming may be a natural rebound from the Little Ice Age that started around 1400 A.D. and was probably unrelated to human activities. But the warming this century started happening during a period when human activities began to increase the concentration of heat-trapping gases, like carbon dioxide, in the atmosphere.

Thomas Crowley, a professor at Texas A&M University, speaking recently at a U.S. Environmental Protection Agency conference, said, "Today's concentration of carbon dioxide in the atmosphere far exceeds any level that has occurred over the last 200,000 years."

Carbon dioxide, methane, and nitrous oxide are called "greenhouse gases" because they trap heat somewhat like the glass panels in a greenhouse, creating what is known as the "greenhouse effect." In fact, the greenhouse effect is a natural phenomenon. Without it, life on Earth would be impossible. But human activities can intensify the greenhouse effect. For example, burning fossil fuels to power our cars, homes, and factories releases carbon dioxide to the atmosphere.



In addition to measuring the temperature rise, scientists have observed various clues in the natural world that indicate global warming is happening. In many areas around the globe, for example, glaciers are retreating. The large ice fields at Montana's Glacier National Park are now approximately one-third the size they were in 1850.

Another indicator of global warming is sea level rise. The water level in the oceans has risen worldwide about 6-8 inches during the last century. The rise is attributed to melting glaciers and the expansion of water that results from warmer ocean temperatures. Robert Quayle, chief of the National Oceanic and Atmospheric Administration's Global Climate Laboratory, has observed that although these trends aren't conclusively linked to global warming, "they are definitely consistent with the changes that could be expected from an enhanced greenhouse effect."

Global warming could have serious consequences for the planet. Among its potential impacts are increased human deaths from infectious diseases, extinctions of animal and plant species, and multiple economic effects from the rise in sea level.

Although there is uncertainty associated with these impacts, the scientists on the Intergovernmental Panel on Climate Change concluded there is enough evidence to warrant a sensible approach toward minimizing what could become our biggest challenge in the twenty-first century. Robert Varney, commissioner of the New Hampshire Department of Environmental Services, has said, "We need to face up to tough decisions. The sooner we do that, the better off we will be, and the better off our children will be."

For more information
Visit EPA's global warming website at *http://www.epa.gov/globalwarming.*